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April 19, 2022

Ms. Jacki Byerley, Planner
Andover Planning Board
Town Office
36 Bartlett Street
Andover, MA 01810

Re: Second Stormwater Peer Review
Special Permit Application Major Non-Residential Project
3000 Minuteman Road
Andover, MA

Dear Ms. Byerley and Board Members:

The Horsley Witten Group, Inc. (HW) is pleased to provide the Andover Planning Board with this letter report summarizing our second peer review of the stormwater management for the proposed project at 3000 Minuteman Road in Andover, Massachusetts.

The plans were prepared for Alexandria Real Estate Equities, Inc. (Applicant) by Symmes, Maini & McKee Associates (SMMA). The Applicant is proposing the development of a 43.6-acre parcel which currently consist of four buildings and an amenity building. The project includes renovating and expanding the 86,000 square foot (sf) Building 1 with a 100,000 sf Building 1A addition, reconfiguring the parking lot, and improving the stormwater infrastructure. The proposed project also includes expanding the parking lot over a pervious area which currently contains solar panels.

HW has reviewed the stormwater management design for compliance with Andover's Stormwater Management and Erosion Control Bylaw and Regulations and the MassDEP Stormwater Standards. The proposed project includes work within Riverfront Area of the Merrimack River and therefore is within the jurisdiction of the Andover Conservation Commission.

HW received the following documents and plans in response to our initial peer review dated March 23, 2022:

- Response to Initial Peer Review, prepared by SMMA, dated April 15, 2022 (10 pages).
- Hydrology, Hydraulics, and Water Quality Calculations dated April 11, 2022 (81 pages).
- Operation & Maintenance Plan with Map, Buildings 1 & 1A, dated April 12, 2022 (9 pages).
- Subsurface Exploration Location Plan – Building 1A, prepared by Haley & Aldrich, dated March 2022 (26 pages).
- Illicit Discharge Compliance Statement (no signature, no date).

- Plan Set Building 1 & 1A for 3000 Minuteman Road, prepared by SMMA, dated January 26, 2022, revised April 12, 2022, which includes:

o Cover Sheet	G-001
o Existing Conditions Plan (01/26/2022)	C-101
o Site Preparation Plan	C-111
o Layout & Materials Plan	C-121
o Grading & Utilities Plan	C-131
o Details I	C-501
o Details II	C-502
o Details III	C-503
o Details IV (01/26/2022)	C-504
o Details V (01/26/2022)	C-505
o Landscape Plan (01/26/2022)	L-101
o Photometric Plan (01/26/2022)	EC-101
o Exterior Elevations (01/25/2022)	
o B1 Floor Plans (01/25/2022)	

Stormwater Review

HW has reviewed the documents listed above and has the following comments concerning the stormwater management design in accordance with the Massachusetts Stormwater Handbook (MSH) dated February 2008, and the Town of Andover Stormwater Management and Erosion Control Bylaw and Regulations amended May 11, 2021 (Stormwater Bylaw).

In accordance with Section VI. B. of the Andover Stormwater Bylaw, the Stormwater Management Permit and Narrative provided by an Applicant shall contain sufficient information to verify compliance with the local Stormwater Bylaw and the MassDEP Stormwater Management Handbook (MSH). Below are comments relating to the standards as presented in the MSH. Where the more stringent requirements of the Andover Stormwater Regulations are applicable those comments are included.

The proposed site improvements are considered a mix of new and redevelopment. The new impervious area is required to comply with the MSH fully while the redevelopment area is required to comply with MassDEP Stormwater Management Standards 2, 3, and 4 only to the maximum extent practicable and the pretreatment requirements of Standards 4, 5, and 6 only to the maximum extent practicable. Existing stormwater discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

The following comments correlate to our March 23, 2022 initial peer review, follow up comments are provided in bold font.

1. *Standard 1 states that no new stormwater conveyances (e.g. outfalls) may discharge untreated stormwater directly to or cause erosion in wetlands or waters of the Commonwealth.*

    a. The existing site discharges stormwater to three separate design points of analysis (DP):

a. DP-1: The stormwater from the developed site is piped towards a 48-inch outfall into the Merrimack River at the northern edge of the site.

b. DP-2: Onsite area that sheet flows offsite towards the west. The area associated with this design point is primarily undeveloped.

c. DP-3: Onsite area that sheet flows offsite towards the east. The area associated with this design point is primarily undeveloped.

Under proposed conditions the Applicant has provided stormwater practices to collect, manage, treat, and recharge the stormwater within the developed areas of the site. The peak flow rates that continue to discharge towards the design points have been reduced under proposed conditions. It appears that there are no new untreated discharges to critical areas as a result of the project.

The Applicant appears to comply with Standard 1.

April 19, 2022: No further comment needed.

2. *Standard 2 requires that post-development runoff does not exceed pre-development runoff off-site.*

a. The Applicant has provided a proposed Grading & Utilities Plan. It appears there are three existing structures that are not tied into the proposed drainage system along the west side of the northern parking area. These catch basins were previously tied into the existing drainage system in the outer access road. HW recommends that the Applicant provide additional information clarifying where these catch basins will be directed.

April 19, 2022: The Applicant has clarified that these three structures will be removed as part of the proposed redevelopment. HW has no further comment.

b. The Applicant has labeled the outlet elevations for each subsurface system on the Grading & Utilities Plan. HW recommends that the Applicant include the bottom of stone, bottom of chamber and top of stone for each subsurface system on the Subsurface Perforated Pipe System detail, found on Sheet C-502.

April 19, 2022: The Applicant has added the additional information to the Detail on Sheet C-502 as suggested. HW has no further comment.

c. The Applicant has proposed 0.6 acres of porous pavement and 0.3 acres of porous pavers. The details provided on Sheet C-503 indicate that 6-inches to 8-inches of reservoir stone will be provided beneath the porous surfaces. HW recommends that the Applicant model the reservoirs as ponds and utilize a curve number of 98 for the porous surfaces. If the stone reservoirs have adequate separation to groundwater the recharge volume provided can be included in the calculations required for compliance with Standard 3 and Standard 4.

April 19, 2022: The Applicant has revised the HydroCAD model and the details for the permeable pavement areas as suggested. HW has no further comment.

d. The Applicant has submitted the HydroCAD model for the proposed project, there appear to be a few inconsistencies between the model and the plan. HW has noted the following:

i. The HydroCAD model for System 1-3 (Detention) indicates an outlet control structure with a 3.0' long sharp-crested weir at elevation 69.10. HW was not able to confirm this information on the Grading & Utilities Plan or the Detail Sheets. HW recommends that the Applicant revisit the design and revise the plans or the calculations for consistency. Furthermore, it appears that the detail callout for OCS 2-1 on Sheet C-131 is referencing incorrectly.

April 19, 2022: The Applicant has corrected the labels on the plans and detail. HW has no further comment.

ii. The Subsurface Perforated Pipe System detail notes 6" stone bedding and 6" of stone cover. The HydroCAD for System 1-3 (Detention) indicates the stone bedding at elevation 66.00 and the chamber elevation at 66.00. The chamber elevation on the plan is noted at 67.00. HW recommends that the Applicant revisit the design and revise the plans or the calculations for consistency.

April 19, 2022: The Applicant has adjusted the HydroCAD model to match the plans. HW has no further comment.

3. *Standard 3 requires that the annual recharge from post-development shall approximate annual recharge from pre-development conditions.*

a. It does not appear that the Applicant has conducted stormwater test pits to adequately document soil types and depth to groundwater within the vicinity of the subsurface systems. HW recommends that the Applicant conduct test pits within the footprint of each proposed subsurface system.

April 19, 2022: the Applicant has justified not conducting the soil testing during the permitting stage. Once the solar panels are removed the testing can occur to confirm the depth to seasonal high water and the soil texture for all systems proposed to infiltrate. HW recommends that the Planning Board consider adding the additional soil testing as a condition of approval.

b. The Applicant has provided recharge calculations stating that the design has adequate storage space below the outlet orifices. HW recommends providing the HydroCAD stage storage tables for each subsurface system to confirm the available storage provided.

April 19, 2022: The Applicant provided the Stage-Area-Storage table as requested. HW has no further comment.

c. The Applicant has increased the impervious area of paved parking and roofs by approximately 1.9 acres. The Applicant has proposed 0.9 acres as porous pavement or porous pavers, for a total increase of 2.8 acres of impervious area. In accordance with Volume 3, Chapter 1, Page 15 of the MSH porous pavement is considered to be impervious for purposes of calculating the Required Recharge and Required Water Quality Volumes. HW recommends that the Applicant revise the calculations provided in Appendix 3.2 using the 2.8 acres of additional impervious area.

April 19, 2022: The Applicant has increased the area of permeable pavement and has revised the Required Recharge and Required Water Quality Volumes based on the 2.8 acres of impervious area. HW has no further comment.

d. The Applicant has stated due to high groundwater on the site, there are portions of the site where stormwater cannot be recharged. The Applicant states that based on geotechnical findings, the seasonal high groundwater onsite is 3-4 feet below the ground surface and therefore is providing recharge only to the maximum extent practicable. HW recommends providing the geotechnical information regarding the groundwater findings.

April 19, 2022: The Applicant has provided the geotechnical findings to be included in the findings. HW has no further comment.

4. *Standard 4 requires that the stormwater system be designed to remove 80% Total Suspended Solids (TSS) and to treat 1.0-inch of volume from the impervious area for water quality.*

a. The Applicant has provided water quality calculations for the water quality flow rate provided by each WQU. It appears that the area being treated by WQU 2-1 has a total area of 3.15 acres. This area is comprised of the adjacent loading areas and half of the existing roof runoff. It is noted that the roof runoff would be clean. However, the additional runoff from the roof increases the flow rate through the WQU. HW recommends reviewing all the WQU calculations to confirm they are consistent with the areas that are flowing to them to confirm they can handle the pass-through flow while maintaining their efficiency. HW recommends revising WQU 2-1 calculations and any others as necessary.

April 19, 2022: The Applicant has revised the sizing of the WQUs as suggested. HW has no further comment.

5. *Standard 5 is related to projects with a Land Use of Higher Potential Pollutant Loads (LUHPPL).*

a. The Applicant has provided a Traffic Impact Assessment prepared by Vanasse and Associates. The proposed redevelopment will increase traffic on the site and based on the additional trips calculated in the traffic impact assessment it appears this project would be considered a LUHPPL as it exceeds 1,000 vehicle trips per day. Therefore, Standard 5 is applicable.

The Applicant has provided 80% TSS removal onsite including 44% pretreatment based on the treatment trains provided and water quality separators.

The Applicant appears to comply with Standard 5.

April 19, 2022: No further comment needed.

6. *Standard 6 is related to projects with stormwater discharging into a critical area, a Zone II, or an Interim Wellhead Protection Area of a public water supply.*

a. The site does not discharge to a critical area, therefore Standard 6 is not applicable.

April 19, 2022: No further comment needed.

7. *Standard 7 is related to projects considered Redevelopment. A redevelopment project is required to meet the following Stormwater Management Standards only to the maximum extent practicable: Standard 2, Standard 3, and the pretreatment and structural best management practice requirements of Standards 4, 5, and 6. Existing stormwater*

discharges shall comply with Standard 1 only to the maximum extent practicable. A redevelopment project shall also comply with all other requirements of the Stormwater Management Standards and improve existing conditions.

a. The proposed project is considered a mix of new and redevelopment, therefore Standard 7 is applicable for a large portion of the site. HW recommends that the Applicant clearly document how it is improving existing conditions. Furthermore, HW suggestions that the Applicant document where the existing solar panels will be relocated to. The Applicant may consider relocating the panels to the new roof or as canopies in the new parking lot.

   April 19, 2022: The Applicant has stated how it is improving existing conditions. HW concurs with the Applicant's statement and we have no further comment.

8. *Standard 8 requires a plan to control construction related impacts including erosion, sedimentation, or other pollutant sources.*

   a. Item 1 of the Stormwater Management Notes on Sheet C-111, states that the contractor shall, protect the existing storm drains as necessary for discharge of stormwater runoff prior to completion of new trunk line in Essex Street. HW recommends that this sequencing extends into post construction and permanent stabilization.

      April 19, 2022: The Applicant has revised the notes on Sheet C-111 as suggested. HW has no further comment.

   b. Under the General Erosion Control Notes on Sheet C-111

      i. Item 3 refers to erosion control measures to stay in place until groundcover is established, HW recommends using the term permanent stabilization, instead of until groundcover is established.

      ii. Item 5 refers to Lexington Conservation Commission, replace with Andover.

      iii. Item 7 states to stabilize stockpiles and exposed soil in areas where construction activities will cease for 21 days. HW recommends changing this to 14 days per the Andover Stormwater Regulations.

      iv. Item 9 notes that detention basins and forebays may be used as temporary sedimentation basins throughout construction and shall be periodically cleaned during construction. HW recommends more detail is provided on the means of periodical cleaning of these structures, to ensure proper long-term functionality, as well as the sequencing of temporary to permanent status of the detention basins and forebays as it relates to the construction phase.

      April 19, 2022: The Applicant has revised the notes on Sheet C-111 as suggested. HW has no further comment.

   c. HW recommends that key dimensions of the temporary construction entrances be shown on the Site Preparation Plan.

      April 19, 2022: The Applicant has added the dimensions as requested to Sheet C-111. HW has no further comment.

   d. HW recommends proposed stockpiling areas with stabilization measures on the Site Preparation Plan.

April 19, 2022: The Applicant has added the stockpile locations to Sheet C-111 as suggested. HW has no further comment.

e. HW recommends that the Applicant include details for each stormwater practice noted in the narrative, such as temporary swales and sedimentation basins, vegetative slope stabilization, and straw bales.

April 19, 2022: The Applicant has added erosion control details as suggested. HW has no further comment.

f. HW recommends that the locations of critical areas for erosion potential are delineated on the Site Preparation Plan as required in the Andover Stormwater Regulations.

April 19, 2022: The Applicant has added callouts to critical areas for erosion to Sheet C-111 as suggested. HW has no further comment.

g. HW recommends that the location of temporary and permanent seeding, vegetative controls, and other temporary and final stabilization measures are delineated on the Site Preparation Plan or clarify where this is information has been provided.

April 19, 2022: The Applicant has documented where the various stabilization measures can be located in the construction package. HW has no further comment.

9. *Standard 9 requires a Long-Term Operation and Maintenance (O&M) Plan be provided.*

The Applicant has provided a Stormwater Operation and Maintenance (O&M) Plan, which includes instructions for maintenance of stormwater control measures, an O&M budget, and an O&M checklist. HW has the following comments regarding the O&M Plan:

a. The O&M Plan does not list name(s) and address(es) of responsible parties but notes that the applicant/owner shall designate a supervisor who shall assume responsibility after a CoC has been issued. The Plan also states that the applicant/owner is financially responsible for operation and maintenance, however no name/address is provided.

April 19, 2022: The Applicant has provided a revised O&M Plan with the requested information. HW has no further comment.

b. HW recommends including an estimated O&M budget within the O&M Plan.

April 19, 2022: The Applicant has provided a revised O&M Plan with the requested information. HW has no further comment.

c. Per Andover Stormwater Regulations Section VI.C.1.b.7, HW recommends including a simple sketch indicating where the stormwater practices to be maintained are located for the entire complex.

April 19, 2022: The Applicant has included a simple plan that illustrates the various stormwater practices for Building 1 and Building 1A. HW has no further comment. This document should be updated as needed when there are future improvements to the campus.

d. HW recommends that the sample log provided reflect the requirements of the Andover Stormwater Regulations, and the submittal is in the form of an annual report to the

Planning Board to be issued by September 1, including:

i. Descriptions of the condition of the stormwater practices,

ii. Descriptions of maintenance performed,

iii. Signature of the responsible party,

iv. Signature of the Professional Engineer, where applicable and,

v. Receipts showing payment for maintenance performed.

April 19, 2022: The Applicant has updated the log to be used for record keeping purposes. HW has no further comment.

e. The Andover Stormwater Regulations require scheduling and construction sequences be included in the Stormwater Narrative. HW recommends that the Applicant provide more details including a narrative of the construction sequence/phasing of the project, including both operation and maintenance for structural and non-structural measures, interim grading, and material stockpiling areas.

April 19, 2022: The Applicant has added construction sequening noted to Sheet C-111. HW has no further comment.

10. Standard 10 requires an Illicit Discharge Compliance Statement to be provided.

a. The Applicant has stated there are no known illicit discharges onsite. HW recommends that the Applicant provide a signed Illicit Discharge Compliance Statement as part of the Report.

April 19, 2022: HW recommends that a signed statement is provided to the Town prior to land disturbance.

Additional Comments per Andover Stormwater Regulations:

11. Section IX (Andover Stormwater Regulations - Design Criteria)

a. C - Pretreatment: The Applicant must size all pretreatment practices (deep sump catch basins) to accommodate one-years' worth of sediment and debris using the calculation provided in Andover's regulations. HW recommends that the Applicant provide the required calculation.

April 19, 2022: The Applicant has provided the requested calculations. HW has no further comment.

12. Other Comments:

a. Pipe calculations – HW recommends that the Applicant providing pipe sizing calculations to confirm that the sizing of the closed drainage pipe system proposed can manage a 25-year storm event.

April 19, 2022: The Applicant has provided the requested pipe sizing calculations. HW has no further comment.

b. HW recommends that the Applicant address any additional comments provided by the Planning Board or Department of Public works in relation to the project in addition to this

letter.

April 19, 2022: No further comment needed.

Conclusions

HW is satisfied that the Applicant has adequately addressed our comments. The Applicant is advised that provision of these comments does not relieve him/her of the responsibility to comply with all Town of Andover Codes and By-Laws, Commonwealth of Massachusetts laws, and federal regulations as applicable to this project. Please contact Janet Bernardo at 857-263-8193 or at jbernardo@horsleywitten.com if you have any questions regarding these comments.

Sincerely,

HORSLEY WITTEN GROUP, INC.

Janet Carter Bernardo, P.E.
Associate Principal

CC: Andover Conservation Commission